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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/829,279	04/22/2004	Kenzo Yamanaka	P24817	6461

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EXAMINER	
CHOW, LIXI	
ART UNIT	PAPER NUMBER
2627	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	04/18/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/18/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com
pto@gbpatent.com

Office Action Summary	Application No.	Applicant(s)	
	10/829,279	YAMANAKA ET AL.	
	Examiner	Art Unit	
	Lixi Chow	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *5-14 and 19-27* is/are allowed.

6)☒ Claim(s) *1,3,4,15,17 and 18* is/are rejected.

7)☒ Claim(s) *2 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 4, 15, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takasuka et al. (US Pub. No. 2003/0202450; hereafter Takasuka) in view of Sakamoto (US Pub. No. 2003/0058776).

Regarding claim 1:

Takasuka discloses an optical system (see Fig. 1) of an optical pick-up for recording data to and/or reproducing data from at least two types of optical discs including a first optical disc and a second optical disc whose recording density is higher than that of the first optical disc, comprising:

a light source unit (Fig. 1 element 1) that is capable of emitting at least two light beams having different wavelengths respectively corresponding to the first and second optical discs (see paragraph [0021]);

an objective lens (Fig. 1, element 6) that is used for respectively converging the at least two light beams on data recording surfaces of the at least two types of optical discs; and

a photo detector (Fig. 1, element 10) that has a main sensor for receiving a main beam of returning light from a disc side, and sub-sensors for receiving sub-beams of the returning light from the disc side (see Fig. 2A-B),

wherein said optical system further comprises an optical surface to satisfy compatibility between the at least two types of optical discs, said optical surface being located between said light source unit and one of the at least two type of optical discs; wherein said optical surface comprises:

an inner region including an optical axis of said objective lens and satisfying a numerical aperture for the first optical disc (see Fig. 1, the light depicted in solid line passes through the inner region of the objective lens);

an outer region located outside said inner region for satisfying a numerical aperture for the second optical disc (see Fig. 1, the light depicted in dotted line passes through the outer region of the objective lens); and

an intermediate region that is located within said outer region at a periphery of the inner region (the outer region of Takasuka would inherently include an intermediate region).

Takasuka discloses all the elements as in claim 1; however, Takasuka fails to disclose the intermediate region of the optical surface, wherein transmissivity for a light beam having a wavelength suitable for the first optical disc in said intermediate region is lower than that in said inner region. On the other hand, Sakamoto discloses an optical system (see Fig. 4) comprising an optical surface to satisfy compatibility between at least two types of optical discs, wherein said the optical surface comprising:

an inner region including an optical axis of said objective lens and satisfying a numerical aperture for the first optical disc (see Figs. 2(a)-(d));

an outer region located outside said inner region for satisfying a numerical aperture for the second optical disc (see Figs. 2(a)-(d)); and

an intermediate region that is located within said outer region at a periphery of the inner region (see Figs. 2(a)-(d)),

wherein transmissivity for a light beam having a wavelength suitable for the first optical disc in said intermediate region is lower than that in said inner region (see paragraph [0030], lines 17-25).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to reduce the transmission of the light for the first optical disc in the intermediate region of the optical surface of the optical system taught by Takasuka. One of ordinary skill in the art would have been motivated to do this, because reducing the amount of a particular light passing through the intermediate region of the optical surface can suppresses the possibility of erroneous detection (see Sakamoto, paragraph [0030], lines 22-25).

Regarding claim 3:

Takasuka discloses the optical system according to claim 1, wherein transmissivity for a light beam having a wavelength suitable for one of the at least two types of optical discs other than the first optical disc in said intermediate region is substantially the same as that of said inner region and said outer region, wherein when the one of the at least two types of optical discs other than the first optical disc is used, the light beam for the one of the at least two types of optical discs other than the first optical disc passed through all of said inner region, said intermediate region and said outer region is utilized (see Fig. 1; since all the regions within the outer region of the optical surface are utilized to transmit the light corresponding to the second optical disc, the transmissivity for the light corresponding to the second optical disc in the intermediate region is the same as that of the inner region and the outer region).

Regarding claim 4:

Takasuka does not, but Sakamoto discloses the optical system, wherein the transmissivity for the light beam having the wavelength suitable for the first optical disc in said intermediate region is about half of or less than half of transmissivity for the light beam having the wavelength suitable for the first optical disc in said inner region (see paragraph [0215]; the transmittance for the light flux for first disc is lowered, therefore, the transmissivity of the intermediate region would have to be about half of or less than half of transmissivity of the inner region).

Regarding claims 15, 17 and 18:

Claims 15, 17 and 18 recite similar limitations as in claims 1, 3 and 4. Hence, claims 15, 17 and 18 are rejected under the same reasons set forth above in claim 1, 3 and 4.

Allowable Subject Matter

2. Claims 2 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of the reference of record alone or in combination disclose or suggest the optical system according to claim 1 and/or the objective lens according to claim 15, wherein **when the first optical disc is tilted by a certain minute angle with respect to a plane perpendicular to the optical axis of said objective lens during reproducing operation of the first optical disc, intensity of a portion of the returning light passed through said intermediate region is reduced on the sub-sensors of said photo detector so that the portion of the returning light does not interfere with photo detection operation of the sub-sensors.**

3. Although Sakamoto discloses an optical surface having inner region, intermediate region, and outer region; however, Sakamoto fails to disclose the intermediate region has a plurality of minute annular zones for giving optical path differences to an incident beam, an absolute value of **each optical path difference generated between adjacent ones of the plurality of minute annular zones is N+0.5 times (N: natural number) as large as the wavelength of the light beam suitable for the first optical disc.**

Accordingly, claims 5-14 and 19-27 are allowed.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yoo et al. (US 6,363,046) is cited, because Yoo et al. teaches a holographic variable aperture for totally transmitting a first light beam to the objective lens while transmitting part of a second light beam to the objective lens.

Nishino et al. (US 6, 111,842) is cited, because Nishino disclose an optical system that satisfies the compatibility between two optical disc, comprising an aperture limitation device, wherein an inner region is used to transmit light associated with a low density disc and an outer region is used to transmit light associated with a high density disc.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lixi Chow whose telephone number is 571-272-7571. The examiner can normally be reached on Mon-Fri, 8:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LC 4/12/07

WAYNE YOUNG
SUPERVISORY PATENT EXAMINER